AZOV, Dmitriy Sergeyevich, podpolkovnik; MAKAVEYEV, V.I., polkovnik, red.

[For the minute before the explosion] Za minutu do vzryva. Moskva, Voenizdat, 196-. 201 p. (MIRA 17:10)

1. AZOV, G.M.

2. USSR (600)

4. Agriculture

7. Principles of technology of milk and milk products. Moskva,Pishchepromizdat, 1952

9. Monthly List of Russian Accessions. Library of Congress, February,1953.Unclassified

AZOV, G.; BURMAKIN, A.

Increasing the production of ice cream in every way., Khol. tekh., 29, no. 1, 1952.

SO: MLRA. May 1952.

SAVINOVSKIY, N., kandidat tekhnicheskikh nauk; AZOV, G., inzhener.

Volumetric packing of ice cream. Khol.tekh. 30 no.4:41-45 O-D '53.
(MLRA 7:3)
(Ice cream, ices, etc.)

AZOV, Grigoriy Moiseyevich; CHICHKOV, N.V., red.; BABICHEVA, V.V., tekhn.red.

[Reference tables for the manufacture of ice cream] Vspomogatel'nye raschetnye tablitsy v proizvodstve morozhenogo. Moskva, Gos.izd-vo torg.lit-ry, 1959. 163 p. (MIRA 13:6)
(Ice cream)

AZOV, Grigoriy Moiseyevich, inzh.; TSIPERSON, A.L., red.; FURMAN, G.V., tekhn. red.

[Frozen custard] Miagkoe morozhenoe. Moskva, Gos. izd-vo torg. lit-ry, 1961. 54 p. (MIRA 14:8)
(Ice cream, ices, etc.)

17(2) SOV/20-127-3-61/71

AUTHOR: Azova, L. G.

TITLE: On Butyric Acid Fermentation on a Medium Containing Lactate

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 3, pp 693 - 695 (USSR)

ABSTRACT: The biological transformation of lactic acid into butyric acid detected by Pasteur (Ref 1) is related to the theory of anaerobiosis. Granulobacter lacto-butyricum Beijerinck (Ref 2) can develop on salts of lactic acid. The difficulty of lactate fermentation by a pure culture of butyric acid bacteria has, however, often been pointed to. It was proved that lactate can only be fermented by a mixture of 2 cultures (Ref 3). In this case a peptone-lactate medium proves favorable if a culture of Bact. coli or butyric acid bacteria is added to the pure culture mentioned. The addition of large quantities of autolysate (up to 30 volume%) has the same effect. Successful fermentation depends on the presence of acetic acid in the medium as was found out for the first time in 1947 (Ref 5). The isolated butyric acid bacterium was given the name of an individual variety - Clostridium lacto-acetophilum. The purpose of this paper is the

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investigation of the fermentation of lactic acid and the function of acetic acid as well as of the dynamics of development of bacterial culture. The results mentioned above can be confirmed. It was proved that of several substances added only acetic and pyruvic acid caused the fermentation of lactic acid. Figures 1 and 2 show the fermentation dynamics of media with the two additions mentioned. The investigation results showed that lactic acid being a sufficiently highly reduced substance can only be utilized by the culture of butyric acid bacteria if combined with a more oxidized substance: with acetic acid or pyruvic acid. The dynamics of the process proved that the utilization of lactic acid does not begin before the oxidative processes necessary for the begin of the development have come to an end. Fermentation of lactic acid in media of simpler composition did not prove to be successful. In addition to the culture investigated there are several others which can ferment lactic acid if the acids mentioned are added: a) Clostr. butyricum and b) butyric acid bacteria from a methane tank (both cultures were provided by the Muzey kafedry mikrobiologii

On Butyric Acid Fermentation on a Medium Containing Lactate SOV/2o-127-3-61/71

(Museum of the Chair of Microbiology of the University mentioned in the Association). It seems that other bacteria which originally cannot ferment the lactate (Refs 3,4) can be caused to do so by the addition of one of the acids mentioned. Thus the separation of an individual variety: Clostr. lacto-acetophilum seems not quite convincing. The investigation was carried out under the scientific supervision of V. N. Shaposhnikov, Academician. There are 2 figures, and 5 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

PRESENTED: March 31, 1959, by V. N. Shaposhnikov, Academician

SUBMITTED: March 3o, 1959

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AZOVA, L.G.

Fermentation of pyroracemic acid by cultures of butyric bacteria.
Mikrobiologiia 29 no.1:62-66 Ja-F '60. (MIRA 13:5)

1. Biologo-pochvennyy fakul'tet Moskovskogo gosudarstvennogo universiteta imeni M.V. Lomonosova.
(BUTYRIBACTERIUM metab.)
(PYRUVATES metab.)

AZOVA, L.G.

Butyric fermentation in a synthetic medium containing pyruvic acid and glycerol. Dokl.AN SSSR 132 no.4:945-947 Je '60. (MIRA 13:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. Predstavleno akademikom V.N.Shaposhnikovym.
(BUTYRIC ACID BACTERIA)
(PYRUVIC ACID)
(GLYCEROL)

AZOVA, L. G., CAND BIO SCI, "UTILIZATION OF CERTAIN C_2- AND C_3-COMPOUNDS IN THE METABOLISM OF BUTYRIC BACTERIA IN CONNECTION WITH THEIR ~~PRODUCTION~~ formation OF BUTYRIC ACID." MOSCOW, 1961. (INST OF MICROBIO OF ACAD SCI USSR). (KL, 3-61, 209).

AZOVA, L.G.

Possibility of cultivating Clostridium butyricum on synthetic media. Dokl. AN SSSR 156 no. 3:689-691 '64. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. Predstavleno akademikom V.N.Shaposhnikovym.

SHAPOSHNIKOV, V.N.; KOZLOVA, Ye.I.; AZOVA, L.G.

Destruction of wool by micro-organisms. Vest. Mosk un. Ser. 6:Biol., pochv. 19 no.2:58-63 Mr-Ap '64.
(MIRA 17:9)

1. Kafedra mikrobiologii Moskovskogo universiteta.

SHAPOSHNIKOV, V.N.; AZOVA, L.G.; KOZLOVA, Ye.I.

Wool fiber spoiling micro-organisms. Mikrobiologiia 33 no.4: 727-736 Jl-Ag '64. (MIRA 18:3)

1. Biologo-pochvennyy fakul'tet Moskovskogo gosudarstvennogo universiteta imeni Lomonosova.

[redacted]: [redacted]BOVA, T.A.

[redacted] acid by butyric acid bacteria. [redacted] sv. shkoly; biol. nauki no.1:187-191 '60.

(MIRA 13:1)

1. Rekomendovana kafedroy mikrobiologii [redacted] sel'skokhozyaystvennogo institutu. Submitted October [redacted], 1959.

AZOV, I. G.

Useful Guide ("Producing Ice cream." D. I. Kobzev. Reviewed by I. G. Azov. Khol. tekh. 29 no. 2, Ap-Je '52.

SO: MLRA. September 1952.

AZOV, V.; FOKIN, D.

The development of the foreign trade of the U.S.S.R. in 1956.
Vnesh.torg. 27 no.11:35-43 '57. (MIRA 10:11)
(Russia--Commerce)

RUBINSHTEYN, G.; FOKIN, D.; AZOV, V.

Soviet Union's foreign trade after the Second World War[with English summary in insert]. Vnesh. torg. 28 no. 4:18-33 '58. (MIRA 11:7)
(Russia--Commerce)

GLUSHCHENKO, S.; AZOV, V.

U.S.S.R. is a prominent partner in international trade [with English summary in insert]. Vnesh.torg. 28 no.11:11-19 '58. (MIRA 11:12)

(Russia--Commerce)

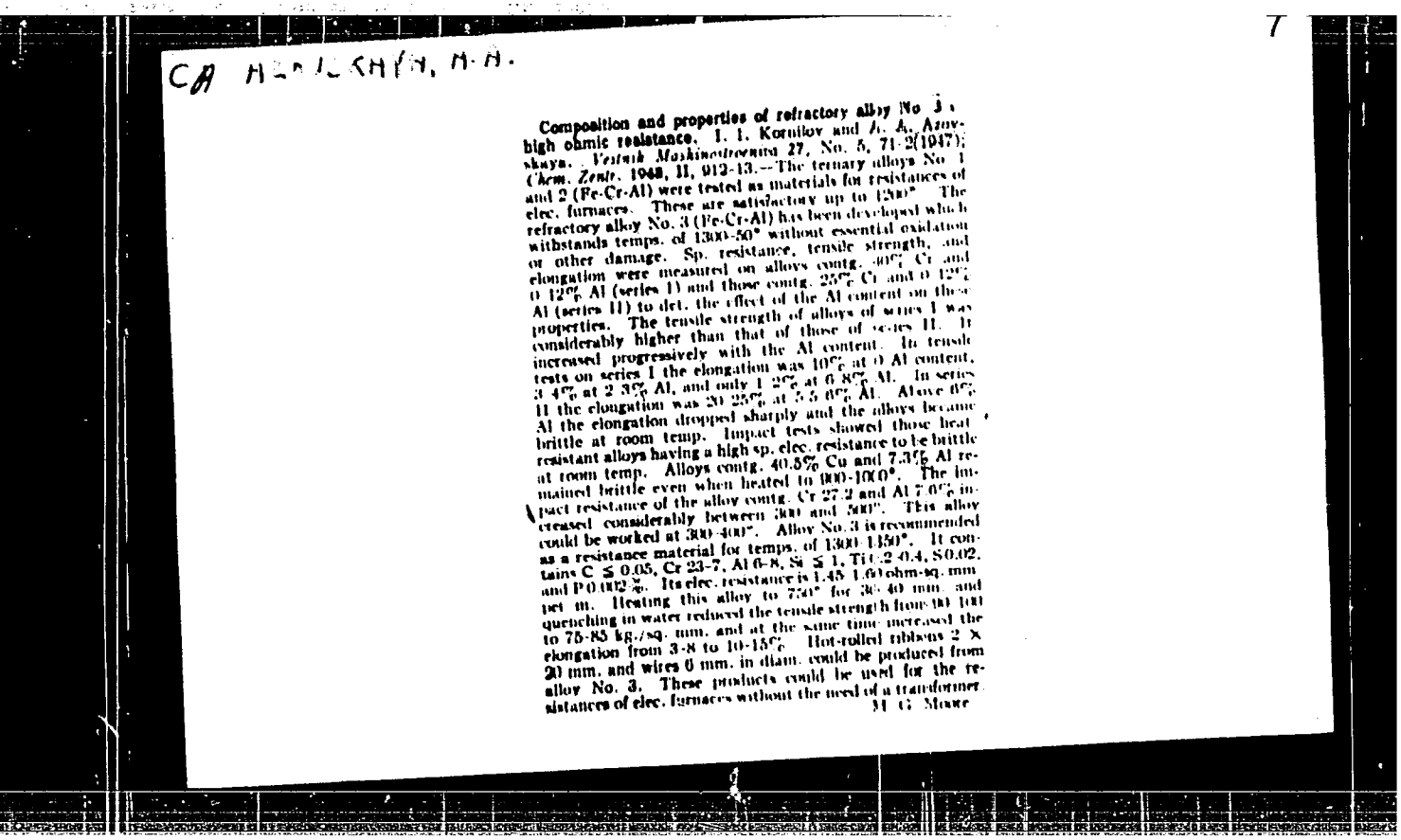
MIKHAYLOV, N.N., kand.geograf.nauk; KOFTOV, G.Ye., kand.ekonom.nauk; BAKHTOV, K.K.; NESTEROV, M.V.; SMIRNOV, A.M., prof., doktor ekon.nauk; RUBINSHTEYN, G.I., kand.geograf.nauk; FOKIN, D.F., kand.ekon.nauk; AZOV, V.N.; KOROTAYEV, A.P. [deceased]; KHYLIN, A.D., prof.; YEZHOV, I.P.; RAMZAYTSEV, D.F.; ANKUDINOV, V.M.; SPANDAR'YAN, V.B., red.; SHLENSKAYA, V.A., red.izd-va; BRONZOVA, I.A., tekhn.red.

[Handbook of Soviet foreign commerce] Spravochnik po vneshnei torgovle SSSR. Moskva, Vneshtorgizdat, 1958. 270 p.
(Commerce) (MIRA 12:2)

AZOV, V.N.; BOL'SHAKOV, L.I.; BUGORSKIY, I.A.; RUBINSHTEYN, G.I.; FOKIN, D.F.; CHEREPANOVA, L.G.

Foreign trade of the U.S.S.R. in 1958; a survey. Vnesh.torg. 29 no.7:13-20 '59. (MIRA 12:11)

(Russia--Commerce)



CA M.A. ILKHIN, M.A.

7

Composition and properties of refractory alloy No 3 of high ohmic resistance. I. I. Kornilov and A. A. Azovskaya. *Vestnik Mashinostroeniya* 27, No. 5, 71-2(1947); *Chem. Zentr.* 1948, II, 912-13.—The ternary alloys No 1 and 2 (Fe-Cr-Al) were tested as materials for resistances of elec. furnaces. These are satisfactory up to 1200°. The refractory alloy No. 3 (Fe-Cr-Al) has been developed which withstands temps. of 1300-50° without essential oxidation or other damage. Sp. resistance, tensile strength, and elongation were measured on alloys contg. 40% Cr and 0-12% Al (series I) and those contg. 25% Cr and 0-12% Al (series II) to det. the effect of the Al content on these properties. The tensile strength of alloys of series I was considerably higher than that of those of series II. It increased progressively with the Al content. In tensile tests on series I the elongation was 10% at 0 Al content, 3-4% at 2-3% Al, and only 1-2% at 6-8% Al. In series II the elongation was 20-25% at 5-5.6% Al. Above 6% Al the elongation dropped sharply and the alloys became brittle at room temp. Impact tests showed these heat resistant alloys having a high sp. elec. resistance to be brittle at room temp. Alloys contg. 40.5% Cu and 7.3% Al remained brittle even when heated to 900-1000°. The impact resistance of the alloy contg. Cr 27.2 and Al 7.0% increased considerably between 300 and 500°. This alloy could be worked at 300-400°. Alloy No. 3 is recommended as a resistance material for temps. of 1300-1350°. It contains C ≤ 0.05, Cr 23-7, Al 6-8, Si ≤ 1, Ti 0.2-0.4, S 0.02, and P 0.002%. Its elec. resistance is 1.45-1.6 ohm-sq. mm per m. Heating this alloy to 750° for 30-40 min. and quenching in water reduced the tensile strength from 90-100 to 75-85 kg./sq. mm. and at the same time increased the elongation from 3-8 to 10-15%. Hot-rolled ribbons 2 × 20 mm. and wires 6 mm. in diam. could be produced from alloy No. 3. These products could be used for the resistances of elec. furnaces without the need of a transformer.

M. G. Manve

Rate of isothermal transformation of austenite as affected by composition in the system iron-carbon. I. I. Kornilov and A. A. Azovskaya. *Izvest. Sektora Fiz.-Khim. Anal., Inst. Obshchel i Neorg. Khim., Akad. Nauk S.S.S.R.* 16, No. 4, 85-95(1948).—It was observed that the rate of transformation of a system is closely connected with its compn., namely the max. rate of transformation coincides with stoichiometric compn. and the farther away from such compn., the longer it takes to attain equil. upon transformation. This investigation dealt with the transformation austenite → ferrite + cementite, as affected by the C content. The Fe-C alloys studied contained only negligible admixts. of Mn, Si, S, and P. The C content varied from 0.18 to 0.94%. The alloys were heated for 30 min. at temps. 100° above the complete change to austenite, quenched in a Pb bath and the time for complete transformation was studied at 715 and 700°, and at 50° intervals down to 300°. The fastest transformation was at a C content of 0.18%. The time required for complete transformation increased with the C content up to 0.81% which is a eutectic and at 0.94% of C decreased again. The factors which detd. the rate of transformation were the concn. of the solid soln. and the nature of the new phase. As the concn. of the solid soln. increased, the rate of transformation decreased while the appearance of a new phase, cementite, hastened transformation. The min. rate coincided with the eutectic. Deviation from this was observed only when intermediate products such as martensite, troostite, etc., were formed.

M. Hosch

AZOVSKAIA, A.A.

KOENILOV, I.I.; AZOVSKAYA, A.A.

Bending strength of aluminum - magnesium alloys at 300°C. Izv. Sekt. fiz. khim. anal. 18:83-85 '49. (MIRA 11:4)

1. Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova AN SSSR.

(Aluminum-magnesium alloys--Testing)

ASHBEL', S.I., professor; AZOVSKAYA, I.I.; SOKOLOVA, V.G.

Levomycetin therapy for chronic pulmonary suppurations in pneumosclerosis. Vrach.delo no.8:871-873 Ag '57. (MLRA 10:8)

1. Klinicheskiy otdel (zav. - prof. S.I.Ashbel') Gor'kovskogo nauchno-issledovatel'skogo instituta gigiyeny truda i professional'nykh zabolevaniy
(CHLOROMYCETIN) (LUNGS--DISEASES)

ASHBEL', S. I., prof.; SOKOLOVA, V.G.; AZOVSKAYA, I.I.

Treatment of chronic lung suppurations with oxytetracycline (terramycin). Sov. med. 22 no.12:32-38 D '58. (MIRA 12:1)

1. Iz klinicheskogo otdela (zav. - prof. S. I. Ashbel') Gor'kovskogo nauchno-issledovatel'skogo instituta gigiyeny truda i professional'nykh bolezney (dir. - kand. med. nauk O. M. Glavruseyko).

(LUNG DISEASES, ther.
oxytetracycline in chronic suppurations (Rus))
(OXYTETRACYCLINE, ther. use
chronic lung suppurations (Rus))

5.3620

77089
SOV/62-59-12-33/43

AUTHORS: Shostakovskiy, M. F., Prilezhayeva, Ye. N., Tsymbal, L. V., Azovskaya, V. A., Starova, N. G.

TITLE: Brief Communication. Concerning Addition of Nucleophilic Reagents to α, β -Unsaturated Sulfones in Presence of "Triton B"

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 12, pp 2239-2241 (USSR)

ABSTRACT: Addition of nucleophilic reagents (alcohols, mercaptans, hydrogen sulfide, dialkyldithiophosphoric acids, etc.) to α, β -unsaturated sulfones of various structures is catalyzed to a great extent by "Triton B" (benzyltrimethylammonium hydroxide). The addition reaction starts upon addition of a few drops of "Triton B" (40-60% aqueous solution, 0.2-0.5% by weight) to an equimolar mixture of reacting substances. In most cases the reaction is exothermic (temperature rises up to 80-100°) and is completed within 2-3 hr, with a nearly quantitative yield. α, β -Unsaturated sulfones,

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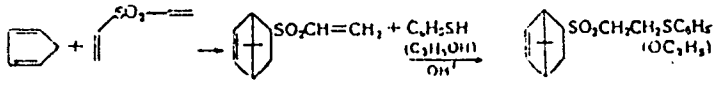
having other unsaturated bonds in the molecule (e.g., endo- and exovinyl bicycloheptenyl sulfones, obtained by reaction of cyclopentadiene with divinyl sulfone), add alcohol or mercaptan under these conditions only at the unsaturated bond activated by sulfone group:



(endo + exo) (endo + exo)

Disulfones, having two unsaturated bonds, add two mercaptan molecules. Table 1 lists the yields and physical constants of the addition products (eight of them prepared to the first time) obtained by the authors.

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TABLE 1

FORMULA	YIELD IN %	bp IN °C (PRESSURE IN mm)	mp (°C)	FOUND %			CALC %		
				C	H	S	C	H	S
$C_2H_5SO_2C_2H_4SC_2H_5$ **)	85,4	147—148,5 (3)	35—36	39,82	7,75	34,93	39,53	7,74	35,17
$C_2H_5SO_2C_2H_4SC_2H_5$ *)	99	—	32—33	42,93	8,22	32,42	42,82	8,21	32,66
$C_2H_5SO_2C_2H_4SC_2H_5$ *)	98	—	40—41	45,44	8,62	30,57	45,68	8,02	30,48
$C_2H_5SO_2C_2H_4SCH_2C_6H_5$ *)	90	—	56	54,04	6,64	26,10	54,06	6,60	26,24
$C_2H_5SO_2C_2H_4SC_2H_5$ ***)	90	124—125 (0,04)	39—40	52,05	6,03	27,68	52,14	6,12	27,90
$C_2H_5SO_2C_2H_4OH$	90	—	42—43	34,78	7,46	22,94	34,76	7,49	23,20
$C_2H_5SO_2C_2H_4OC_2H_5$ *)	91	125—130 (4)	—	43,40	8,42	19,30	43,39	8,49	19,29
$C_2H_5SO_2C_2H_4OC_4H_9$ -n) *)	89,6	116—116,5 (0,5)	—	49,37	9,37	16,44	49,45	9,34	16,50
$C_2H_5SO_2C_2H_4OC_2H_4OH$ *)		114—116 (0,03)	—	33,13	7,77	17,66	39,54	7,74	17,60
$(C_2H_5SO_2C_2H_4OCH_2)_2$ *)	Сумм. 85,4	188—190 (0,03)	—	39,55	7,33	21,19	39,71	7,33	21,21
$(C_2H_5SO_2C_2H_4)_2S$ *)	85	—	108—109	35,40	6,79	34,82	35,01	6,61	35,05
****) $C_2H_5SO_2C_2H_4SP(S)(OC_2H_5)_2$	34—43	133—137 (0,04)	—	31,46	6,18	31,43	31,35	6,25	31,40

(CONT.)

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TABLE 1 (cont.)

77089, SOV/62-59-12-33/43

FORMULA	YIELD %	bp in °C (PRESSURE IN mm)	mp (°C)	FOUND % C	FOUND % H	FOUND % S	CALC % C	CALC % H	CALC % S
 $SO_2C_2H_4OC_2H_5$ * (эндо + экзо)	Сумм. 94	85—85,5 (0,03)	—	56,95	8,06	13,93	57,36	7,88	13,92
		95—97 (0,03)	—	57,53	8,01	14,04			
 $SO_2C_2H_4SC_6H_5$ * (эндо + экзо)	Сумм. 86	—	33	—	—	21,50	61,06	6,13	21,74
		—	47	61,32	6,27	21,70			
$C_6H_5SO_2CH_2CH-CHCH_2SO_2C_6H_5$ * $SC_6H_5SC_6H_5$	84	—	112—113	56,53	6,66	24,81	55,99	6,66	24,92

Notes: * Obtained for the first time. ** In the literature [Lorenz, W., Pat. FRG (Federal Republic of Germany), 876691 (5/18/1953); Referat. Zhur. Khim., Nr 32864 (1955)], it is described as a compound, liquid at room temperature, bp 127-129° (2 mm). *** Literature [Moore, A. H. Ford, J. Chem. Soc., 1949, 2433], mp 36-38°. **** Found: P 9.62; 10.00%. Calculated: P. 10.11%. In the literature [Thompson, R. B., Cheniceck, J. A., Symon, T., J. Ind. Eng. Chem., 50, 797 (1958)] it is described as "nonvolatile residue".

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Brief Communication. Concerning Addition of Nucleophilic Reagents to α,β - Unsaturated Sulfones in Presence of "Triton B"

77089
SOV/62-59-12-33/43

There is 1 table; and 6 references, 2 Soviet, 1 German, 1 U.K., 2 U.S. The U.K. and U.S. references are: A. H. Ford, Moore, J. Chem. Soc. 1949, 2433; J. L. Szabo, E. T. Stiller, J. Amer. Chem. Soc. 70, 3667 (1948); Ch. D. Hurd, L. L. Gershbein, J. Amer. Chem. Soc. 69, 2328 (1947); R. B. Thompson, J. A. Chenicеck, T. Symon, J. Industr. and Engng. Chem., 50, 797 (1958).

ASSOCIATION: N. D. Zelinskiy Institute of Organic Chemistry of the Academy of Sciences, USSR (Institut organicheskoy khimii imeni N. D. Zelinskogo Akademii nauk SSSR)

SUBMITTED: May 4, 1959

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S/079/60/030/04/13/020
B001/B016

5.3831

AUTHORS: Shostakovskiy, M. F., Prilezhayeva, Ye. N., Azovskaya, V. A., Dmitriyeva, G. V.

TITLE: Investigations in the Field of Sulfones and Sulfoxides. I. Synthesis of Vinyl Ethyl Sulfone and Some of Its Transformations

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 4, pp. 1123-1130

TEXT: The data available on the reactivity of low vinyl alkyl sulfones (Refs. 1-10) under the influence of ionic and free-radical initiators are not clear. In order to clarify this problem, vinyl ethyl sulfone was taken as initial product. It was synthesized by dehydration of 2-hydroxy-diethyl sulfone (I) with phosphoric acid at 260-270° in the vacuum (Ref. 11) according to the scheme

$$HOCH_2CH_2SC_2H_5 \xrightarrow{H_2O_2} \underset{(I)}{HOCH_2CH_2SO_2C_2H_5} \xrightarrow{H_3PO_4} \underset{(II)}{CH_2=CHSO_2C_2H_5}.$$

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Investigations in the Field of Sulfones and Sulfoxides. I. Synthesis of Vinyl Ethyl Sulfone and Some of Its Transformations

S/079/60/030/04/13/080
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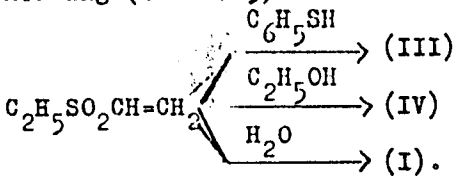
The yield in pure sulfone (II) was 70-75%; it contained no sulfoxides. The dehydration method is far more convenient than the widely used dehydrochlorination method (Refs. 1,2a,3,4,6,10) (Scheme 2). "Triton B" was used as the initiator of the ionic reactions of vinyl ethyl sulfone (II); the reaction proceeded smoothly and quantitatively on intense heating (Scheme 3):



The attempt of polymerizing vinyl ethyl sulfone under the influence of free-radical initiators gave polymers in fair yield on prolonged heating (Polymerization Schemes). Vinyl ethyl sulfone shows a high dienophilic activity, and yields adducts with cyclopentadiene, hexachloro cyclopentadiene, and chloroprene. The table shows the polymerization of vinyl ethyl sulfone at 60° for 60 h. There are 1 table and 20 references, 4 of which

Investigations in the Field of Sulfones and Sulfoxides. I. Synthesis of Vinyl Ethyl Sulfone and Some of Its Transformations

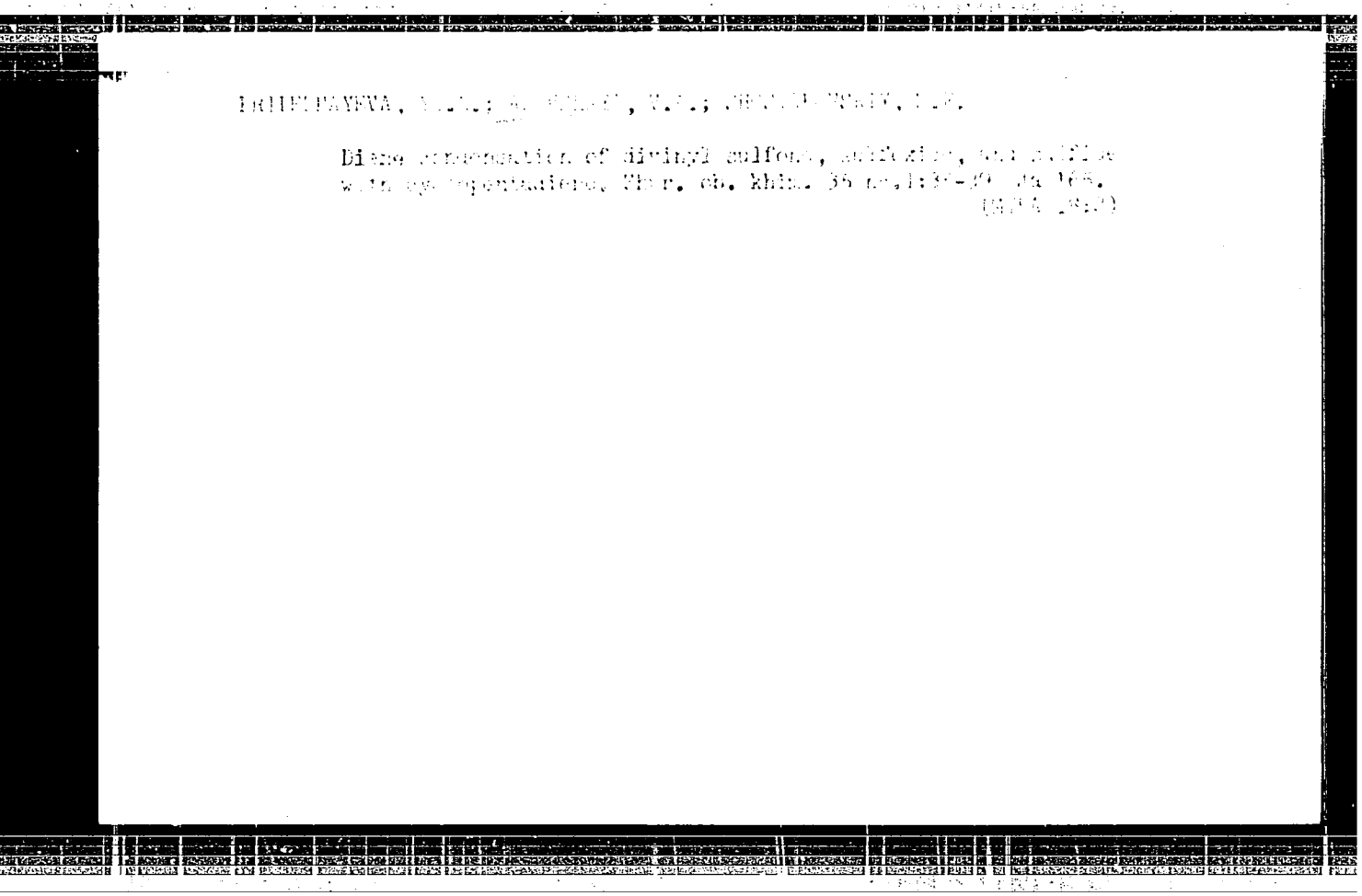
S/079/60/030/04/13/080
B001/B016

are Soviet.

ASSOCIATION: Institut organicheskoy khimii Akademii nauk SSSR (Institute of Organic Chemistry of the Academy of Sciences, USSR)

SUBMITTED: June 22, 1959

Card 3/3



[illegible], Ye.N.; AZOVSKAYA, V.A.; [illegible], I.N.; [illegible], Ye.E.; ANDRIANOVA, G.; SHOSTAKOVSKIY, M.F.

Diene condensation of divinyl sulfone, sulfoxide, and sulfide with hexachlorocyclopentadiene. Zhur. ob. khim. 35 no.1:39-46 Ja '65. (MIRA 18:2)

AZOVSKAYA, Z.I.

Phenoxymethylpenicillin prevention of complications in scarlet fever. Antibiotiki 6 no.9:51-53 S '61. (MIRA 15:2)

1. Kafedra infektsionnykh bolezney (zaveduyushchiy Ye.N.Gorkin) Gor'kovskogo meditsinskogo instituta imeni S.M.Kirova.
(SCARLET FEVER) (PENICILLIN)

L 23580-66 EPF(n)-2/EWT(1)/ETC(f)/EWG(m) IJP(c) AT/GS

ACC NR: AT6008838 SOURCE CODE: UR/0000/65/000/000/0005/0018

AUTHOR: Sinel'nikov, K. D.; Khizhnyak, N. A.; Repalov, N. S.; Zeydlits, P. M.; Yamnitskiy, V. A.; Azovskaya, Z. A.

ORG: none

TITLE: Injection of particles into a mirror trap with an increasing field through a magnetic cusp configuration

SOURCE: AN UkrSSR. Magnitnyye lovushki (Magnetic traps). Kiev, Naukova dumka, 1965, 5-18

TOPIC TAGS: magnetic mirror trap, plasma injection, particle trajectory, magnetic mirror

ABSTRACT: The behavior of a plasma in a magnetic mirror trap formed by particles injected through a cusp configuration is studied. The particles selected for investigation are those which at injection have curvature radius of less than 71% of the Larmor radius, i. e. those which proceed without reflection into the magnetic mirror region. The eccentricity of the particle trajectory (passing through the zero field plane) due to the cusp configuration is analyzed. Two competing processes become evident; one tends to establish an E-layer as in the Astron machines and another tends to fill the axial region of the mirror trap. The analysis is further extended to determine the accumulation in the magnetic mirror trap of particles passing through a

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L 23580-66

ACC NR: AT6008838

O

smooth cusp field having only a zeroth harmonic. The conversion of longitudinal energy into transverse particle energy is determined as a function of the initial radial distance of the trajectory from the magnetic axis. The number of particles trapped indicates that construction of an experimental machine is feasible provided the proper magnetic field configuration is used. It is estimated that a field with high harmonic components would trap particles with broader initial velocity and injection angle parameters. Orig. art. has: 7 figures, 10 formulas.

SUB CODE: 20/ SUBM DATE: 20Oct65/ ORIG REF: 002/ OTH REF: 000

Card 2/2 PB

L 16930-66 EWT(1)/T IJP(c)

ACC NR: AT6002496 SOURCE CODE: UR/3137/64/000/070/0001/0013

AUTHOR: Sinel'nikov, K.D.; Khizhnyak, N.A.; Repalov, N.S.; Zeydlits, P.M.; Yampitskiy, V.A.; Azovskaya, Z.A.

ORG: none

TITLE: Injection of particles through an acute-angled magnetic trap into a mirror trap with increasing fields of the mirrors

SOURCE: AN UkrSSR, Fiziko-tekhnicheskiy institut. Doklady, no. 70, 1964. Inzhektsiya chastits v zerkal'nuyu lovushku s narastayushchim polem v probkakh cherez magnitnuyu lovushku ostrougol'noy geometrii, 1-13

TOPIC TAGS: magnetic mirror machine, particle trapping, magnetic trap, computer calculation, charged particle

ABSTRACT: The authors investigate the passage of charged particles injected through an end slit parallel to the axis of the magnetic field through an acute-angled magnetic trap. A general introduction of magnetic mirror effect is followed by a theoretical study of the effect of acute-angled field geometry on the eccentricity of particles passing through the zero field plane, and the filling of an increasing field mirror trap by particles passing

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ACC NR: AT6002496

through the acute-angled trap. The paper gives 1) the conditions for the passage of particles with large and small displacement of the particle rotation center from the magnetic axis; and 2) the results of the numerical calculations of the trap filling carried out on the UMShN electronic computer. Curves presented depict the conversion of longitudinal into transverse velocity as a function of the injection-to-final-radius ratio, and as a function of the initial radial velocity, and particle trapping during a slow field increase. The results show that the method for particle trapping presented is technologically feasible. Acute-angled traps with higher field harmonics are not studied. Orig. art. has: 21 formulas and 8 figures.

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 002

L 18840-66 EWT(1) IJP(c) GS

ACC NR: AT5028589 SOURCE CODE: UR/0000/65/000/000/0388/0402

AUTHOR: Sinel'nikov, K. D. (Academician AN UkrSSR); Khizhnyak, N. A.; Repalov, N. S.; Zeydlits, P. M.; Yamnitskiy, V. A.; Azovskaya, Z. A.

ORG: none

TITLE: Investigation of the charged particle motion in picket fence magnetic traps

SOURCE: Konferentsiya po fizike plazmy i problemam upravlyayemogo termoyadernogo sinteza. 4th, Kharkov, 1963. Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza (Physics of plasma and problems of controllable thermonuclear synthesis); doklady konferentsii, no. 4, Kiev, Naukova dumka, 1965, 388-402

TOPIC TAGS: magnetic trap, relativistic particle, plasma charged particle, particle trajectory, particle motion, magnetic field

ABSTRACT: The properties of charged particle motion in magnetic traps of the "picket fence" and "magnetic wall" (with negative field curvature) types are considered and their trajectories determined by numerical integrations. The traps are characterized by axial symmetry and small angles between field lines. The analytical form of the fields is described by the expansion of the scalar magnetic potential

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L 18840-66

ACC NR: AT5028589

in Bessel functions, retaining the first term only. Since both curl and divergence of the field within magnetic coils vanish, the magnetic intensity for "picket fence" traps (easily generalized to other geometries) is determined and analytical expressions are derived for two extreme cases of extended and compressed traps. A method for determining the fields in the throat area of the trap of a given radius is also given. Application of the Lagrangian and Hamiltonian of the charged particle motion and the utilization of the cyclic azimuthal coordinate of axisymmetric fields leads to derivation of a potential in which a particle moves and determines the extent of regions of particle confinement. It is found that there always exists a region through which particles can escape. The escape criteria and a classification of transmitted and reflected particles in which the gyroradius of the particles, and hence mass, play a strong role are presented. Additional classification relative to the initial particle parameters is also discussed. In particular, it is shown that the behavior of particles injected in a direction opposite to the system axis is similar to that of those injected parallel to the axis, excepting that the initial radial separation of the former from the axis is greater. Representative trajectories are graphed. The discussion is further generalized to the relativistic particles for which presently realizable magnetic confinement schemes require very strong fields. Orig. art. has: 17 figures, 34 formulas.

SUB CODE: 20/ SUBM DATE: 20May65/ ORIG REF: 002/ OTH REF: 002

Card 2/2 vmb

DMITRIYEV, A.D., dotsent; ULITSKIY, B.YE., dotsent; ZABOLOTNEV, A.M., assistent; AZOVSKIY, A.I., inzhener.

Bridge spans with external prestressed reinforcements having lengthwise and crosswise members. Avt.dor. 18 no.8:22-23 D '55. (MLRA 9:5)

(Bridges, Concrete)

CHZHU CHZHI-KHE [Chu Chih-he]; AZOVSKIY, I.P. [translator]; GALIMOV, A.A. [translator]; ZHEREBILOV, V.A. [translator]; AFANAS'YEVSKIY, Ye.A., red.; KLIMENKO, S.V., tekhn.red.

[Burma] Birma. Moskva, Izd-vo inostr.lit-ry, 1958. 228 p. (MIRA 13:2)
Translated from the Chinese.
(Burma)

Azovskiy, Yu. S.

120-6-19/36

AUTHORS: Safronov, B.G., Azovskiy, Yu.S., and Aseyev, G.G.

TITLE: A Mass Spectrometric Ion Source with Surface Ionization. (Mass-spektrometricheskiy istochnik ionov s poverkhnostnoy ionizatsiyey)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, No.6, pp. 80 - 82 (USSR).

ABSTRACT: Ion sources using the phenomenon of surface ionisation have a number of advantages over thermionic sources. One of the major disadvantages of the surface ionisation type of source is the loss of matter by evaporation since the surfaces lose not only ions but also neutral molecules in consequence of which the isotopic composition is affected (Ref.10). A source employing two filaments was described in Ref.1 in 1953. On one of the filaments was deposited a substance under investigation (this filament acted as a molecular beam source) while the other filament could be heated up to 2 000 °C and served as an ioniser. This system was more effective than the one-filament system, but the matter loss was still considerable. The latter disadvantage is removed in the new source now described. In the present source, the ionising filament is surrounded by a cylindrical tube emitting vapour of the substance. The tube had a slit on it through which the ions can be emitted. The substance under

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AZOVSKIY, Yu. S.

20-1-21/54

AUTHOR: Sinel'nikov, K.D., Academician, Ukrainian SSR Academy of Sciences, Zaytsev, B.G., Azovskiy, Yu. S.

TITLE: Separation of Isotopes When an Atomic Beam Passes Through Ionization Space
(Razdeleniye izotopov pri prokhozhdenii atomnogo puchka cherez prostranstvo ionizatsii)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 1, pp. 80 - 83 (USSR)

ABSTRACT: Simple theoretic considerations speak in favour of the possibility of the separation of isotopes on the occasion of the passage of an atomic beam consisting of an isotopic mixture through a space in which this beam is bombarded with electrons. The atomic beam is said to consist of the masses m_1 and m_2 ($m_1 < m_2$) and to have the temperature T at its leaving. Then the particles have the mean kinetic energy (3/2)kT and $v_1/v_2 = \sqrt{m_2/m_1}$, where v_1^2 and v_2^2 are the mean quadratic velocities of the corresponding isotopes. Through such a beam the electrons are said to pass with a temperature sufficient for the ionization of the beam and the ions developing on this occasion are to be transported out of the beam. A formula is deduced for the decrease of the beam in the ionization space.

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Azovskiy Yu. S.

AUTHORS: Sinel'nikov, K. D., Ivanov, V. Ye., Safronov, B. G., Azovskiy, Yu. S., Aseyev, G. G. 56-2-9/51

TITLE: The Separation of Isotopes in a Non-Steady Molecular Flow (Razdeleniye izotopov pri nestatsionarnom molekulyarnom techenii)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1956, Vol 34, Nr 2, pp 327-330 (USSR)

ABSTRACT: In the non-steady molecular flow of mercury vapor a change of the content of isotopes in the flow is observed. The scheme of the measuring arrangement is shown by a diagram. As material served mercury which was in a steel ampoule and could be separated from the system by means of a valve. The content of mercury isotopes was measured by means of the one-jet method for the lightest and for the heaviest isotope, and from these measurements $\beta = I_{198}/I_{204}$ was calculated. The standard ratio β_0 does not change within 2 days. The just discussed measurements were carried out by means of an iron tube and analogous measurements were then carried out by means of a glass tube and a copper tube. The results

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obtained by the glass-and the iron tube are shown in a diagram. The mercury flow is enriched with the lighter isotope immediately after its appearance and it takes about 8 hours to return again to the standard composition. The desorbed mercury is enriched with the heavy isotope. The time necessary for the formation of the steady flow as well as for the standard-like isotope composition decreases at T = 290°C. For a glass tube at T = 20°C this time is one tenth of that of an iron tube. Another diagram shows the results of measurements of the flow as well as of the isotope composition in a copper tube at T = 20°C. The course of the curves coincides qualitatively for copper and iron. The solution of the absorption problem found by P. Clausing (reference 1) coincides well with the experimental curve, which speaks in favor of the applicability of such calculations for the flow of mercury vapors through a glass tube. The analogous calculations for a copper tube proved the impossibility of the description of the change of flow and of the composition of isotopes by means of Clausing's equation. The difference of curves for the flows through an iron and through a copper tube are probably based on the solution of the diffusion of mercury into the depth of the

walls of the copper tube. Thus it was shown that the different sorption times lead to a separation of isotopes. This phenomenon must be considered a source of error in exact mass-spectroscopic measurements. There are 3 figures and 2 references, 1 of which is Slavic.

SUBMITTED: August 30, 1957

AVAILABLE: Library of Congress

1. Isotopes-Separation 2. Mercury vapor-Molecular flow-Applications 3. Mercury isotopes-Measurement

Card 3/3

SAFRONOV, B.G.; ASEYEV, G.G.; AZOVSKIY, Yu.S.

[Propagation of successive shock waves] Rasprostranenie posledovatel'nykh udarnykh voln. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 64-88 p. (MIRA 17:3)

SINEL'NIKOV, K.D.; SAFRONOV, B.G.; AZOVSKIY, Yu.S.; ASEYEV, G.G.; VOYTSENYA, V.S.

[Magnetic properties of a plasma behind the front of a strong shock wave] Izuchenie magnitnykh svoistv plazmy za frontom sil'noi udarnoi volny. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 89-105 p. (MIRA 17:1)

SAFRONOV, B.G.; CHURAYEV, V.A.; AZOVSKIY, Yu.S.; ASEYEV, G.G.; VOYTSENYA, V.S.

[Distribution of a variable magnetic field in solid single-loop coils] Raspredelenie peremennogo magnitnogo polia v massivnykh odnovitkovykh katushkakh. Khar'kov, Fiziko-tekhn. in-t, 1960. 106-133 p. (MIRA 17:1)

SINEL'NIKOV, K.D.; SAFRONOV, B.G.; AZOVSKIY, Yu.S.; ASEYEV, G.G.; VOYTSENYA, V.S.

Studying the magnetic properties of a plasma behind a strong shock wave front. Zhur.tekh.fiz. 31 no.8:893-898 Ag '61. (MIRA 14:8)

1. Fiziko-tekhnicheskiy institut AN USSR, Khar'kov.
(Plasma (Ionized gases)--Magnetic properties)
(Shock waves)

10.1410

24.6711

27169
S/057/61/031/009/009/019
B104/B102

AUTHORS: Safronov, B. G., Aseyev, G. G., and Azovskiy, Yu. S.

TITLE: Propagation of shock-wave series

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 9, 1961, 1066-1072

TEXT: The authors studied the propagation of shock waves in hydrogen, air, and argon, which were produced in highly ionized discharges performing attenuated oscillations. The semiperiods of the shock-wave series were found to be equal to those of the discharge current. For generating shock waves, they used T sources (R. G. Fowler et al., Phys. Rev., 82, 879, 1951; A. C. Kolb, Phys. Rev., 107, 345, 1957; A. C. Kolb, Phys. Rev., 107, 1197, 1957) and K sources (V. Josephson, J. Appl. Phys., 29, 30, 1958). The parameters of the discharge circuits were:

T source	2.0 microfarads	4.9 μsec	0.30 microhenries	6-12 kv
K source	2.0 "	2.0 "	0.05 "	20 kv

The shock waves were recorded with an ФЭУ-19 (FEU-19) photomultiplier whose signal was amplified and fed to an ОК-17 (OK-17) oscilloscope.

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S/057/61/031/009/009/019
B104/B102

Propagation of shock-wave series

With a small distance of the multiplier from the source, 5-7 light maxima could be found. The time interval between these peaks was equal to the semiperiod of the discharge. Measurements showed that the initial velocity of the shock-wave series was equal to that of the discharge current; the initial velocity of the first shock wave was higher than that of the second one, and so forth. The first shock waves from T and K sources satisfy Kolb's relations up to a distance of $l \leq 40$ cm of the wave front from the source. At $l > 40$ cm the shock-wave retardation increases due to the effect of the walls. Starting from a certain distance from the source, the second and following shock waves propagate faster than the first one. This is explained by the fact that the following shock waves may propagate through a heated and ionized gas. Measurements showed that shock waves propagated faster in an ionized gas than in a neutral one. Mach numbers up to 80 were attained; ionization was estimated to be some 10 %, temperature $\sim 10^4$ °K. The authors thank K. D. Sinel'nikov for a discussion of results. There are 7 figures, 2 tables, and 6 references: 1 Soviet and 5 non-Soviet.

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S/781/62/000/000/019/036

AUTHORS: Sinel'nikov, K. D., Safronov B. G., Azovskiy Yu. S., Aseyev, G. G., Voytsenya V. S.

TITLE: Study of magnetic properties of a plasma behind the front of a strong shock wave

SOURCE: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady I konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-tekh. inst. AN Ukr. SSR. Kiev, Izd-vo AN Ukr. SSR, 1962. 86-92

TEXT: The scope of the investigation is similar to that of Shao, Resler, and Kantorowitz (ref. 3: J. Appl. Phys. 26, 95 (1955), except that the shock waves under consideration are stronger (with Mach number closto 50 rather than the upper limit of 17 in the cited paper). The experimental setup consisted of a shock tube with conical shock-wave source made of organic glass, placed in a solenoid which could be so set as to make the shock wave travel in a homogeneous or inhomogeneous magnetic field. The change in magnetic field connected with the passage of the shock wave was registered with a magnetic probe, and the velocity of the shock

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wave in the probe region was registered with two photomultipliers whose entrance slits were spaced 5-6 cm apart. The principal measurements were made in air at an initial pressure 0.2 mm Hg. It was found during the course of the experiments that the magnetic probes had a higher resolution than the photomultipliers.

Figures are presented showing oscillograms of the probe and photomultiplier signals, the dependence of the probe signal amplitude on the magnetic wave and on the velocity of the shock wave, and the emf induced in the probe when a plasma disc moves in a magnetic field relative to the probe.

The principal conclusions are that in the case of strong shock waves the distribution of the conductivity behind the front of the shock wave cannot be determined with the aid of this procedure, inasmuch as the half-width of the conductivity zone behind the front of the shock wave greatly decreases with increasing Mach number. In the case of the work of Shao et al, this procedure can be used, but the results must be approached with caution, since only the eddy currents were taken into account and thermal diamagnetism was completely ignored. Certain preliminary experiments were also made to determine the polarization of the plasma behind the front of the shock wave, showing that when a shock wave

moves in a homogeneous transverse field it becomes polarized in a plane perpendicular to the magnetic field. Attempts to measure the polarization voltage as a function of the magnetic field intensity have led to values only half as large as the theoretical voltage, and the reason for this is not yet clear. There are seven figures and four references, all to Western literature.

41321

S/057/62/032/009/004/014
B125/B186

AUTHORS: Azovskiy, Yu. S., Guzhovskiy, I. T., Safronov, B. G., Churayev, V. A.

TITLE: Conical source of plasma clouds

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 9, 1962, 1050 - 1054

TEXT: Two conical plasma sources are studied comparatively in a glass-enclosed vacuum chamber. One of the sources was provided with a spiral (Fig. 1), the other was not. The plasma in the sources was produced by discharging a condenser bank, the breakdown was initiated by injecting the plasma from a "spark source". This design permits of using of the source within the vacuum system without an additional discharge.exciter. The plasma consisted of decomposition products from the organic glass of which the tube was produced such as H, O, C ions. The parameters of the plasma bunches were measured with a magnetic probe and an ФЭУ-19М (FEU-19M) photomultiplier, and by using the microwave signal "out-off" method (ZhETF, 36, 411, 1959). Fig.3 shows the typical time dependence l = f(t) for the plasma cloud position in the tube. The plasma clouds ejected by

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electromagnetic forces from a source with a spiral in the first and second half-cycles of the discharge are highly ionized. The density of the charged particles in the first cloud is $>10^{12}$ cm^{-3}, in the second one it is greater by one order of magnitude. In the third and subsequent half-cycles, the source with a spiral emits a weakly ionized ($>10^{12}$ cm^{-3}) gas jet. The magnetic flux of the induced current is proportional to the initial voltage of the condenser bank. The source without spiral emits a high-density cloud in the first half-cycle without induction of currents in the cloud. A weakly ionized gas jet is emitted in the second and subsequent half-cycles. Conclusion: The efficiency of a conical source is much increased by a spiral inverse current conductor. The pulsed input of gas to the source with spiral may permit the production of relatively dense and pure plasma clouds with velocities above $1 \cdot 10^7$ cm/sec. There are 5 figures and 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR, Khar'kov (Physico-technical Institute AS UkrSSR, Khar'kov)

SUBMITTED: June 17, 1961 (initially)
February 6, 1962 (after revision)

ACCESSION NR: AT4036067 S/2781/63/000/003/0250/0255

AUTHORS: Azovskiy, Yu. S.; Guzhovskiy, I. T.; Safronov, B. G.; Churayev, V. A.

TITLE: Conical plasmoid source

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 250-255

TOPIC TAGS: plasmoid, plasma source, plasma radiation, plasma research, microwave plasma, plasmoid acceleration, plasma density

ABSTRACT: Plasmoids produced by a conical source were investigated in an experimental setup consisting of a plasma source and a vacuum chamber. The conical plasma source was similar to that described

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ACCESSION NR: AT4036067

elsewhere (Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza, no. 2, Izd-vo AN UkrSSR, 1963) but had different dimensions. The vacuum chamber was a glass tube with inside diameter 60 mm. The initial pressure in the vacuum system did not exceed 2.7×10^{-3} m/m^2 (2×10^{-5} mm Hg). The plasmoid parameters were investigated with the following equipment: 1. Photomultiplier to register the glow of the ionized gas. 2. Magnetic probe to register the variation of the external magnetic field due to the plasmoid motion (or the magnetic field of the plasmoid currents in the absence of an external field). 3. The velocity of the plasmoid layer with density 1×10^{12} cm^{-3} was determined by the microwave signal "cutoff" method with a signal of frequency 9.5×10^{9} cps. Oscillograms of all these data were used to determine the delay curves, the dependence of the plasmoid velocity on the initial capacitor bank voltage, and the dependence of the plasmoid velocity on the energy fed to the plasma source. The investigation confirmed the previously obtained results. To ascertain the effect of different parameters of the discharge circuit on the source

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ACCESSION NR: AT4036078 S/2781/63/000/003/0348/0353

AUTHORS: Azovskiy, Yu. S.; Guzhovskiy, I. T.; Dushin, L. A.; Privezentsev, V. I.; Churayev, V. A.

TITLE: Microwave methods of plasmoid diagnostics

SOURCE: Konferentsiya po fizike plazmy* i probleman upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 348-353

TOPIC TAGS: plasmoid, plasmoid acceleration, plasma source, plasma density, plasma wave reflection, plasma wave absorption, Doppler effect

ABSTRACT: Several microwave methods used to determine the density and translational velocity of charged particles in a plasmoid. The

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ACCESSION NR: AT4036078

ASSOCIATION: None

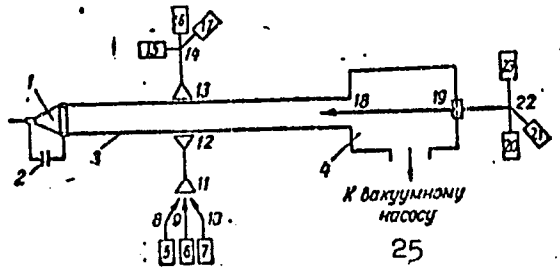
SUBMITTED: 00 DATE ACQ: 21May64 ENCL: 02

SUB CODE: ME NR REF SOV: 003 OTHER: 001

Card 3/5

ACCESSION NR: AT4036078

ENCLOSURE: 01

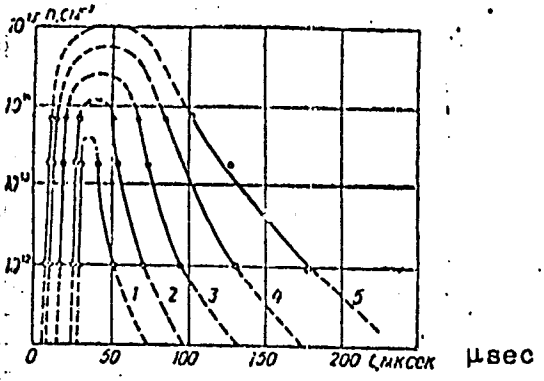


Block diagram of set-up: 1 - conical source; 2 - capacitor bank; 3 - glass tube; 4 - vacuum chamber; 5, 6, 7, 21 - generators; 8, 9, 10, 18 - dielectric antennas; 11 - input horn of waveguide channels; 12, 13 - horns irradiating the plasma; 14, 22 - double waveguide tees; 15, 16, 17, 23 - detector heads; 20 - matching unit; 19 - vacuum seal, 25 - to vacuum pump

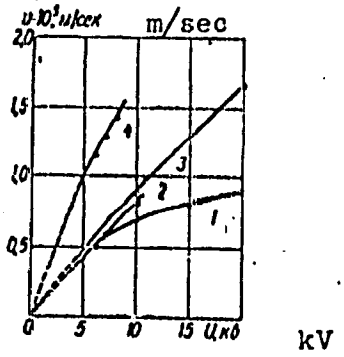
Card 4/5

ACCESSION NR: AP4036078

ENCLOSURE: 02



Distribution of charged-particle density in plasmoids at different voltages (kv): 3 (1), 4 (2), 6 (3), 8(4), and 10 (5). Time measured from start of discharge



Dependence of initial velocity of different layers of the plasmoid on the initial capacitor-bank voltage; densities: 1 - maximum 2 - 10^{12} (Doppler effect), 3 - 10^{12} (hf signal cutoff), 4 - 5×10^{10} (cm^{-3})

Card 5/5

L 15596-63 EWT(l)/EWG(k)/BDS/ES(w)-2 AFFTC/ASD/ESD-3/AFWL/SSD
Pz-4/Pi-4/Po-4/Pab-4 AT/IJP(C)
ACCESSION NR: AP3006492 S/0170/63/006/009/0057/0060 8 1 30

AUTHOR: Azovskiy, Yu. S.; Guzhovskiy, I. T.; Dushin, L. A.; Privezentsev, V. I.; Churayev, V. A.

TITLE: Microwave methods for diagnosing plasmoids

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 6, no. 9, 1963, 57-60

TOPIC TAGS: plasmoid electron concentration distribution, plasmoid critical electron density, plasmoid sharp front boundary, plasmoid velocity measurement

ABSTRACT: This article describes microwave methods for diagnosing plasmoids. The distribution of electron concentration in a plasmoid was studied and the velocity of the plasmoid determined. Plasmoids were produced by means of the discharge of a capacitor bank (6 μf), through a conical source, and were propagated in a glass tube (6 cm in diameter and 120 cm in length) with a residual pressure not exceeding 2×10^3 newtons per square meter. Probing of plasmoids was carried out at three frequencies: 9×10^9, 37.5×10^9, and 75×10^9 cps, which correspond to critical electron densities of 10^{12}, 1.7×10^{13}, and 7×10^{13} cm^{-3}, respectively. The transmitting and receiving antennas were placed at a distance of 50 cm from the plasmoid source. It was found that plasmoids have a sharp front boundary.

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L 15596-63
ACCESSION NR: AP3006492

The plasmoid electron density at a 3-kv capacitor voltage was on the order of 10^{13} cm^{-3}. With an increase in voltage the electron density also increased to a value of 10^{15} cm^{-3} at a voltage higher than 10 kv. The velocities of plasmoids with electron densities of 10^{12} cm^{-3} have been measured by the Doppler effect. Velocity measurements of low-density plasmoids (10^{10}—10^{11} cm^{-3}) were made by a method which employs a cavity resonator (9.6 cm in diameter and 100 cm in length) in which the H_{11} mode was excited at a frequency of 2.3×10^9 cps. A plasmoid was simulated by means of a metallic rod inserted into a glass tube placed inside the resonator. The insertion of the rod resulted in the detuning of the resonator and, at points corresponding to the cavity resonance dimensions, resulted in a sharp increase in the indicator voltage. From readings taken at various voltages across the capacitor bank, graphs were plotted of distance versus time for plasmoids with a density of 5×10^{10} cm^{-3}. These graphs showed that different plasmoids moved with different speeds, which resulted in a decrease of the steepness of the plasmoid front as it moved along the tube. Orig. art. has: 4 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR, Khar'kov (Physicotechnical Institute, AN USSR)

Card 2/3

AZOVSKIY, Yu.S.; GUZHOVSKIY, I.T.; MAZALOV, Yu.P.; MANK, V.V.; SAFRONOV, B.G.; CHUPAYEV, V.A.

Conical induction source of plasma bunches. Zhur. tekh. fiz. 33 no.10:1149-1158 O '63. (MIRA 16:11)

SINEL'NIKOV, K.D.; AZOVSKIY, Yu.S.; GUZHOVSKIY, I.T.; PANCHENKO, V.Ye.; SAFRONOV, B.G.

Interaction of plasma bunches with an axially symmetric magnetic field. Zhur. tekh. fiz. 33 no.10:1159-1168 O '63.
(MIRA 16:11)

ACCESSION NR: AT4036066 S/2781/63/000/003/0237/0250

AUTHORS: Azovskiy, Yu. S.; Guzhovskiy, I. T.; Mazalov, Yu. P.; Mank, V. V.; Safronov, B. G.; Churayev, V. A.

TITLE: Inductive conical plasmoid source

SOURCE: Konferentsiya po fizike plazmy* i problemam upravlyayemogo termoyadernogo sinteza. 3d, Kharkov, 1962. Fizika plazmy* i problemy* upravlyayemogo termoyadernogo sinteza (Plasma physics and problems of controlled thermonuclear synthesis); doklady* konferentsii, no. 3. Kiev, Izd-vo AN UkrSSR, 1963, 237-250

TOPIC TAGS: plasmoid, plasma source, plasma radiation, plasma research, microwave plasma, charged particle concentration, plasma density, ionized plasma

ABSTRACT: An inductive plasmoid source with a conical single-turn coil was investigated, and the plasmoids produced by it were studied

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ACCESSION NR: AT4036066

by recording the visible radiation of the plasmoids with a photomultiplier and by recording the plasmoid currents with magnetic probes. The plasmoid velocity was determined from the Doppler effect produced when microwave radiation is reflected from the front of the plasmoid. The charged-particle density in the plasmoid was determined by the microwave-signal "cutoff" method (I. S. Shpigel', ZhETF, 36, 411, 1959), and the mass composition of the plasmoid was determined with a Thomson mass analyzer (parabola method). The conclusions drawn from the results are as follows: 1. The sources produce hydrogen plasmoids with density exceeding 2×10^{14} cm^{-3} at an average velocity 3×10^5 m/sec (450 eV) and a total number of particles 10^{19} (approximately 0.5 cm^3). The total plasmoid energy is of the order of 1,000 J (25% of the energy fed to the coil and 8% of the capacitor-bank energy). The currents circulating in the plasmoids are of the order of 10^4 A and attenuate far away from the source. The plasma impurities amount to about 10% (only 1% in the front part of the plasmoid) and the plasmoid length is relatively

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ACCESSION NR: AT4036066

large (6--8 meters). The source efficiency can be increased by preionization of the neutral gas. "The authors are grateful to Ye. F. Malayev for help in the erection of the apparatus, to I. Yu. Adamov, A. I. Skibenko, and V. I. Privezentsev for measuring the particle density, and to V. S. Voytsena for useful advice in the mass analysis of the plasmoids. Orig. art. has: 10 figures, 1 formula, and 2 tables.

ASSOCIATION: None

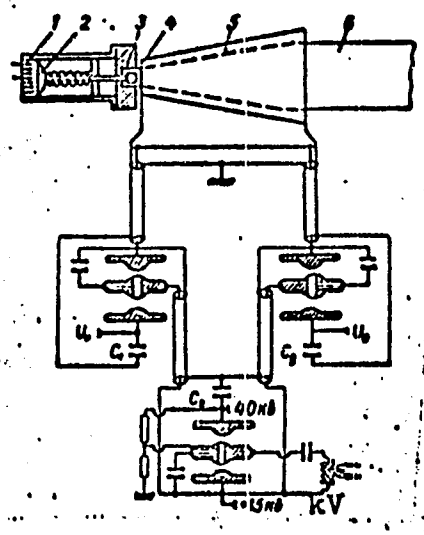
SUBMITTED: 00 DATE ACQ: 21May64 ENCL: 01

SUB CODE: ME NR REF SOV: 008 OTHER: 011

Card 3/4

ACCESSION NR: AT4036066

ENCLOSURE: 01



Schematic diagram of installation:

1 - valve coil, 2 - valve anvil,,
3 - teflon gasket, 4 - valve cap,
5 - conical coil, 6 - glass tube

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ACCESSION NR: AP4035693

S/0057/64/034/005/0841/0846

AUTHOR: Azovskiy, Yu.S.; Guzhovskiy, I.T.; Safronov, B.G.

TITLE: A conical source of plasma bursts with electrodes and pulsed admission of gas

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.5, 1964, 841-846

TOPIC TAGS: plasma, plasma jet, plasma source, hydrogen plasma

ABSTRACT: A conical source of plasma bursts was constructed as shown in the figure (Enclosure 01), and its behavior was investigated. The work was undertaken in an effort to develop a source that would produce bursts comparable in purity with those obtained with an induction source (Yu.S.Azovskiy, I.T.Guzhovskiy, Yu.P.Mazalov, V.V. Mank, B.G.Safronov and V.A.Churayev,ZhTF 33,1149,1963) while employing the simple external circuitry of previously investigated plastic sources (Yu.S.Azovskiy, I.T. Guzhovskiy, B.G.Safronov and V.A.Churayev,ZhTF 32,1050,1962). Hydrogen (usually 2 or 3 cm^3) was admitted to the discharge chamber, and after a delay of 210, 270 or 350 microsec (of which about 175 were required for the valve to open) a 6 microfarad capacitor, charged to between 5 and 20 kV, was discharged across it. The resulting

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ACCESSION NR: AP4035693

plasma bursts were investigated in various ways: 1) the ion content was analyzed with a mass spectrometer; 2) the visible radiation was detected with a photomultiplier and displayed on an oscillograph; 3) the currents in the plasma bursts were detected with a movable magnetic probe (1.4 mm diameter, 8 mm long) and displayed on an oscillograph; 4) the cut-off of 37 500 megacycle microwaves was observed; 5) the relative energies of the bursts were determined with a thermocouple probe. The plasma bursts contained from 70 to 90% hydrogen, including a small quantity of H_2^+ and H_3^+. The principal impurities were carbon and oxygen from the pump oil vapor, and to a lesser extent, sodium and silicon from the glass walls, and copper and zinc from the brass electrodes. Several bursts were ejected during each discharge. In general, one burst was ejected during each half cycle (4.5 microsec), but two or even three bursts were frequently ejected during the first half cycle. This multiple ejection during the first half cycle is tentatively ascribed to radial oscillations of the pinched discharge. The plasma bursts completely cut off the microwaves; their charged particle density therefore exceeded 1.7×10^{13} cm^{-3}. The velocity of the bursts was directly proportional to the discharge voltage and increased with decreasing delay between gas admission and firing. The first burst ejected was the most rapid. With a 210 microsec delay and a 10 kV discharge potential, the velocity of the

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ACCESSION NR: AP4035693

first burst was 5.3 x 10^6 cm/sec. Currents circulated in the plasma bursts in the same direction as in the winding about the discharge chamber. These currents decreased with time at a rate approximately proportional to the velocity of the burst, so that the current had decreased by a factor e when the burst had traveled 7.2 cm from the source. Similar behavior was observed in the much more rapid bursts from the induction source (loc.cit.supra), the corresponding distance in this case being 8.8 cm. It is accordingly suggested that the decay of the current is due less to the finite conductivity of the plasma than to expansion and interaction with the wall of the drift tube. "In conclusion the authors express their gratitude to V.A. Churayev and N.G.Shulika for their participation in several preliminary experiments" Orig.art.has: 5 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 09May63 DATE ACQ: 20May64 ENCL: 01

SUB CODE: ME NR REF SOV: 004 OTHER: 000

Card 3/4

ACCESSION NR: AP4040302 S/0057/64/034/006/1011/1012

AUTHOR: Azovskiy, Yu.S.; Guzhovskiy, I.T.; Safronov, B.G.

TITLE: Concerning measurement of the energy of plasma bursts with thermal probes

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.6, 1964, 1011-1012

TOPIC TAGS: plasma, plasma source, plasma jet, plasma temperature

ABSTRACT: The energies of plasma bursts from a conical plasma gun described elsewhere (Yu.S.Azovskiy, I.T.Guzhovskiy and B.T.Safronov,ZhTF 34,73,1964) were measured with a number of differently constructed thermal probes in order to obtain information concerning the errors involved in such measurements. The probes were 1.4 cm diameter cylinders of 0.1 mm copper foil, closed at one end, and were positioned with the open end toward the incident plasma. Probes were tested for which the ratio L/D of length to diameter was 0 (disc), 1,2 and 3. The equilibration time of the probes was of the order of one second, and the cooling time (due mainly to conduction through the thermocouple leads) was of the order of one minute. The probes tested with and without a conical shield, thermally insulated from the probe, which prevented the plasma flowing past the probe from coming in contact with the outer

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ACCESSION NR: AP4040302

wall. The energy indicated by both the shielded and the unshielded probes (temperature rise divided by heat capacity) increased monotonically with increasing L/D. For the unshielded probes this rise was nearly linear; the curve for the shielded probes reached a constant value for L/D greater than about 2 or 3. The low readings obtained with the disc and the short cylindrical probes are ascribed to the formation of a plasma "cushion", due to a shock wave propagating up stream, which shields the probe from the plasma. The high readings obtained with the long unshielded cylindrical probes are ascribed to heat influx through the cylindrical wall of the probe in contact with the flowing plasma. The reading of even the flat probe was smaller when the conical shield was employed than when it was unshielded; this indicates that plasma can strike the rear face of the disc. It is concluded that while thermal probes of any shape may be useful for relative measurements over a small energy range, absolute measurements require a deep hollow shielded probe. Orig.art.has: 1 figure..

ASSOCIATION: none

SUBMITTED: 24Jun63 DATE ACQ: 19Jun64 ENCL: 00

SUB CODE: ME NR REF SOV: 004 OTHER: 001

Card 2/2

L 23811-65 EWT(1)/EWG(k)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EEC(b)-2/EWA(m)-2
Pz-6/Po-4/Pab-10/Pi-4 IJP(c) AT

ACCESSION NR: AP5000835 S/0057/64/034/012/2129/2134

AUTHOR: Azovskiy, Yu.S.; Guzhovskiy, I.T.; Mazalov, Yu.P.; Pistryak, V.M.

TITLE: Interaction of plasma bursts with an axially symmetric magnetic field. 2.

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.12, 1964, 2129-2134

TOPIC TAGS: plasma interaction, plasmoid, magnetic field plasma effect, plasma diffusion

ABSTRACT: The present study was a continuation of earlier work (K.D.Sinel'nikov, Yu.S.Azovskiy, I.T.Guzhovskiy, V.Ye.Panchenko and B.G.Safronov, ZhTF 33,10,1963) devoted to investigation of the interaction of plasma bursts with an axially symmetric magnetic field. As compared to the earlier work, in the present study there were used purer hydrogen plasma bursts, produced by a conical source with pulsed gas injection. Primary attention was given to the interaction of the bursts with an inhomogeneous field (only preliminary measurements were made in a uniform field). The theoretical aspects of the phenomenon are reviewed briefly. The apparatus was basically the same as in the earlier work. Typical oscillograms of the signals from the magnetic probe are reproduced. These indicate the distribution of the field and

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current over the length of the burst; the initial density of the bursts was evaluated by the microwave cutoff technique. The results are presented in the form of curves characterizing the induced current versus the position of the burst in the magnetic field, the value of the induction coefficient versus the position of the burst, the density and radius of the burst versus its position, the position of the burst versus time, the radial density distribution of the particles in the burst, the variation of the "vacuum" magnetic field, the induced current field and their ratio in function of the field at the center of the solenoid, and the variation in the density and radius of the burst in function of the magnetic field. It is tentatively concluded that under the given experimental conditions the diffusion of the plasma is not anomalously rapid (measurements in a much larger field region are necessary to confirm this). "In conclusion, the authors express their deep gratitude to K.D.Sinel'nikov, N.A.Khizhnyak and B.G.Safronov for discussion of the experimental results." Orig.art.has: 7 figures.

ASSOCIATION: none

SUBMITTED: 20Dec63 ENCL: 00 SUB CODE: ME

NR REF SOV: 007 OTHER: 000

2/2

L 23814-65 EWT(l)/EWG(k)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EEC(b)-2/EWA(m)-2
Pz-6/Po-4/Pab-10/Pi-4 IJP(c) AT

ACCESSION NR: AP5000836 S/0057/64/034/012/2135/2139

AUTHOR: Azovskiy, Yu.S.; Akhmerov, R.V.; Guzhovskiy, I.T.; Mazalov, Yu.P.; Pistryak, V.M.

TITLE: Interaction of plasma bursts with an axially symmetric magnetic field. 3.

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.12, 1964, 2135-2139

TOPIC TAGS: plasma interaction, plasmoid, magnetic field plasma effect, plasma diffusion

ABSTRACT: In the present work, as in the study described previously (preceding article in this issue of the journal (p.2129) - see Abstract ACC.NR:AP5000835), there was investigated the interaction of plasma bursts with an inhomogeneous magnetic field, the difference being that in the present work there were used denser bursts ($n > 10^{14}$ cm^{-3}). The experimental setup is diagramed in the Enclosure. The two series-connected coils were located 50 cm from the source and produced a double hump field. The source was filled with either 100% hydrogen or 75% H and 25% He; in both cases each gas injection equalled 3 cm^3 (atmospheric pressure). The source was triggered 6 millisec after switching on the magnetic field, so that the burst interacted with the maximum field. The following equipment was used to measure the burst

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parameters incident to the interaction: a photomultiplier (usually an FEU-19) to detect the integral radiation, and ISP-51 spectrograph with a short-focus camera for photographing the plasma radiation spectrum, an ISP-51 spectrograph with a long-focus camera for following the behavior of individual spectrum lines and the continuous radiation, a high-speed photographic device for recording the radial compression of the burst, and a magnetic probe for recording the current induced in the burst. The photomultiplier and probe output signals were displayed on an oscillograph. Some typical oscillograms are reproduced. The experimental results are presented mainly in the form of curves giving the variation of the burst radius, density and electron temperature as a function of the magnetic field and the variation of the position of the injected bursts and reflected shock wave with time. With arrival of successive plasma bursts in the nonuniform field region there builds up a "cushion", resulting in a shock wave propagating in the opposite direction to the plasma stream. "In conclusion, the authors express their gratitude to K.D.Sinel'nikov, N.A.Khizhnyan and B.G.Safronov for discussion of the results, to V.G.Padalka for useful advice, and to V.F.Gaynukov who participated in some of the preliminary experiments." Orig.art.has: 6 figures.

L 23814-65
ACCESSION NR: AP5010836

ASSOCIATION: none

SUBMITTED: 20Dec63

ENCL: 01

SUB CODE: ME

NR REF SOV: 003

OTHER: 002

3/4

L 23814-65

ACCESSION NR: AP5000836

ENCLOSURE: 01

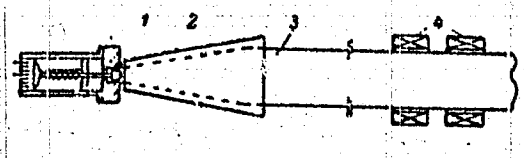

Diagram of the setup: 1 - valve, 2 - induction coil source, 3 - glass tube (9 cm inside diameter), 4 - magnetic coils

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L 49256-65 EWT(d)/EWT(l)/EEC(k)-2/EPF(n)-2/EWG(m)/EEC-4/EPA(w)-2 Pz-6/Po-4/Pab-10/
Pq-4/Pe-4/Pi-4/Pk-4/Pl-4 IJP(c) WW/AT

ACCESSION NR: AP5010802 UR/0057/65/035/004/0643/0649

AUTHOR: Azovskiy,Yu.S.; Guzhovskiy,I.T.; Nazalov,Yu.P.; Pistryak,V.M.

TITLE: On the motion of plasma bursts in field free space

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 4, 1965, 643-649

TOPIC TAGS: plasma, plasmoid, velocity measurement, doppler effect, expanding gas, electron temperature

ABSTRACT: The authors have measured the velocities of plasma bursts from a conical plasma gun by means of the Doppler effect. Two different frequencies were employed (3.2 and 9.0 Gc/sec); the measured velocities therefore correspond to the motions of two different density regions within the burst. The plasma bursts were produced by the 28 kV discharge of a 27 μfd capacitor through a conical plasma gun containing approximately 3 cm^3 of hydrogen, and traveled in a 9 cm diameter 50 cm long glass tube and subsequently in a 18 cm diameter 200 cm long plastic tube. The measured motions of the two particle density regions (1.1×10^{11} and 1.1×10^{12} cm^{-3}) are presented graphically. A theory of a freely expanding plasma is briefly developed for both the one- and three-dimensional cases. This theory was employed to

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L 49258-65

ACCESSION NR: AP5010802

3

calculate from the measured velocities the velocity of the center of gravity of the burst and the sum of the ion and electron temperatures. Because of the uncertainty concerning several factors involved in the calculation, the calculated value of 5 eV for the sum of the electron and ion temperatures is regarded as in satisfactory agreement with the value of 8 eV previously obtained for the electron temperature in similar plasma bursts from the intensity ratio of the HeI 4921 and HeI 4713 lines (Yu.S.Azovskiy et al., ZhTF, 34, 2135, 1964). "In conclusion, the authors express their gratitude to B.G.Safronov and N.A.Khizhnyak for discussing the results of the work, and to E.V.Akhmerov for participating in the preparation of the experiment." Orig. art. has: 7 formulas, 6 figures, and 1 table.

ASSOCIATION: None

SUBMITTED: 11Jun64 ENCL: 00 SUB CODE: NE

NR REF SOV: 005 OTHER: 003

Card 2/2

L 8907-66 EWT(1)/ETC/EPF(n)-2/EWG(m) IJP(c) AT

ACC NR: AT5022281 SOURCE CODE: UR/3137/64/000/049/0001/0013

AUTHOR: Azovskiy, Yu. S.; Guzhovskiy, I. T.; Mazalov, Yu. P.; Pistryak, V. N.

ORG: Academy of Sciences UkrSSR, Physicotechnical Institute (Akademiya nauk UkrSSR, Fiziko-tekhnicheskiy institut)

TITLE: Motion of plasmoids in field-free space

SOURCE: AN UkrSSR. Fiziko-tekhnicheskiy institut. Doklady, no. 049/P-008, 1964. O dvizhenii plazmennykh sgustkov v svobodnom ot poley prostranstve, 1-13

TOPIC TAGS: plasmoid acceleration, plasma diagnostics, hydrogen plasma

ABSTRACT: The speed of current sheets of a given density was determined by observing the main part of a plasmoid which moves in field-free space. After the ejection of a plasmoid from the source, it initially moved into a glass tube of 9 cm diameter, then into an organic glass tube of 18 cm diameter. Hydrogen was used in the experiment. In the present experimental conditions, the first dense plasmoid ejected was studied. It occured during the third half-period of the discharge. Sheets of different densities move with different speeds; those of lower density are faster. With the increase of retardation (neutral gas injection into the source) the speeds of both sheets decrease. The greatest delay occurs in the small diameter glass tube. This results in a decrease of the curvature of the plasmoid front. The motion of

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L 8907-66

ACC NR: AT5022209

sheets was measured by the microwave reflection doppler effect. The use of the speed of sound in plasma to characterize plasmoid thermal expansion is discussed. In conclusion the authors express their gratitude to B. G. Safronov and N. A. Khizhnyak for reviewing the results and to R. V. Akhmerov for his help in setting up the experiment. Orig. art. has: 6 figures, 1 table, 6 formulas.

SUB CODE: 20/ SUBM DATE: none ORIG REF: 005/ OTH REF: 003

44,55 44,55 44,55

Card 2/2

L 2494-66 EWT(1)/ETC/EPF(n)-2/EWO(m)/EPA(w)-2 IJP(c) AT
ACCESSION NR: AP5020726 UR/0057/65/035/008/1405/1407

AUTHOR: Azovskiy, Yu. S.; Guzhovskiy, I. T.; Nazalov, Yu. P.; Pistryak, V. M.

TITLE: On the motion of plasma bursts in a uniform axially symmetric magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 8, 1965, 1405-1407

TOPIC TAGS: plasmoid, magnetic field plasma effect, plasma temperature, plasma density, homogeneous magnetic field

ABSTRACT: The authors have continued their previous investigation of the motion of plasma bursts in axially symmetric fields (ZhTF, 34, No.12, 1964). The work reported here concerns mainly the motion of the plasmas in the uniform portion of the field. The apparatus is described in the previous paper. The plasmas had charged particle densities of about 2×10^{13} cm^{-3} and velocities near 6×10^{6} cm/sec, and contained 10% of heavy ions. The gas pressure within the plasmas was measured with a compensated magnetic probe of the type described by F.Waelbroeck et al. (Nuclear Fusion, Suppl. 2, 675, 1962) and the diameters of different sections of the plasmas were measured with a pulsed plasmascope consisting of a light-shielded 7 cm diameter scintillator with control grids. The variations of the

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L 2494-66

ACCESSION NR: AP 5020726

duration of the magnetic probe signal, the charged particle density, and the plasma temperature as the plasma drifts in the uniform field are shown graphically for different values of the magnetic field strength. As the plasma moved down the field its length increased, its radius remained practically unchanged, and its temperature and charged particle density decreased. The possibility of a decrease of temperature during longitudinal expansion of a plasma in a magnetic field has been pointed out by F.Waelbroeck et al. (loc. cit.) and by F.R.Scott and O.C. Eldride (Phys. Fluids, 4, 1558, 1961). Orig. art. has: 3 formulas and 3 figures.

ASSOCIATION: none

SUBMITTED: 28Dec64 ENCL: 00 SUB CODE: ME

NR REF SOV: 004 OTHER: 002

Card 2/2

L 41069-66

ACC NR: AT6020419

duce the plasma. However, the theoretical predictions indicate that the experimental results can serve as an estimate of plasma expansion. Orig. art. has: 6 formulas, 6 figures, 1 table.

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 005/ OTH REF: 003

Card 2/2

L 43914-66

ACC NR: AT6020403

field. While most of the results can be reconciled with the qualitative theoretical descriptions of this phenomenon published by others, the plasmoid exhibited an unexpected acceleration in the region beyond the point corresponding to the maximum current. It is noted in conclusion that the results differ greatly from the earlier investigation, primarily because the plasma used there consisted essentially of heavy carbon and oxygen ions. The maximum compression rate in the magnetic field was produced where the magnetic field had a maximum gradient. The induced current first increased with the field, and then more rapidly than the field. However, once the plasmoid has been radially compressed, the induced current began to decrease rapidly. A noticeable crowding out of the magnetic field was observed, causing the axial field in the plasma to drop to about 15% of the vacuum field. The induction of the current was accompanied by a certain slowing down of the plasmoid motion, thus indicating that the translational energy was converted partially into radial and rotational energy. Orig. art. has: 9 figures.

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 006

Card 2/2 pb

ACC NR: AT6020404

impurities had the same character, whereas the glow due to the hydrogen was much longer. The latter is due to the longer recombination time of the hydrogen. An increase in the magnetic field increased all the components of the radiation (approximately by 3 times as the field increased from 0 to 0.2 - 0.3 Tesla), after which the increase slowed down. Measurements were also made of the dependence of the radius, density, and electron temperature of the plasmoid as functions of the analytic field and the dependence of the position of the injected plasmoid and the reflected shock wave in the plasma as functions of the time. Attention is called to the fact that at fields up to 0.20 - 0.25 Tesla all the plasmoids are compressed to an equal degree, but at larger magnetic fields only the first plasmoid is compressed, and the others are not. This is related to the occurrence of a shock wave at stronger magnetic fields. Orig. art. has: 6 figures.

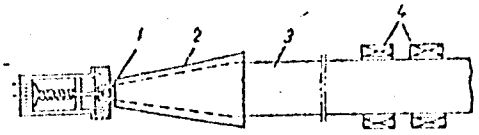

Fig. 1. Diagram of setup. 1 - Valve, 2 - induction source, 3 - glass tube, 4 - magnetic coils.

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 003/ OTH REF: 002

Card 2/2 PB

L 45921-66 EWT(1) IJP(c) AT

ACC NR: AP6028606 SOURCE CODE: UR/0057/66/036/008/1357/1363

AUTHOR: Azovskiy, Yu.S.; Guzhovskiy,I.T.; Pistryak,V.M.

ORG: none

TITLE: Interaction of plasma bursts with an axially symmetric magnetic field. 4.

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 8, 1966, 1357-1363

TOPIC TAGS: moving plasma, plasma density, magnetic field plasma effect, plasma temperature, plasma structure, plasmoid, AXIAL MAGNETIC FIELD, PLASMA INTERACTION

ABSTRACT: The present paper presents results of a continuation of earlier work of the authors and Yu.P.Mazalov (ZhTF, 34, 2129, 1964; ZhTF, 35, 1405, 1965) on the interaction of the plasmas from a conical-electrode plasma gun with an axially symmetric magnetic field. The apparatus has been described in the earlier papers. The plasmas from the conical gun entered the 20 cm diameter plastic drift tube with a velocity of about 6×10^6 cm/sec and a charged particle density of about 2×10^{13} cm^{-3}. A longitudinal magnetic field of up to 1.2 kOe was maintained in the drift tube by a solenoid. In the work reported here the plasmas were investigated with a double electric probe consisting of two parallel 0.8 mm diameter 5 mm long molybdenum wires mounted 2 mm apart. The probe could be moved both radially and axially and was used to investigate the structure of the plasmas and their radial and longitudinal expansion in different parts of the drift tube. Three regions of extreme values of

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ACC NR: AP6035702 (N) SOURCE CODE: UR/0413/66/000/019/0048/0048

INVENTORS: Azovtsev, A. A.; Bolkhovitinov, V. K.; Ivanova, V. A.; Kolpakova, G. A.; Kyun, Ye. V.; Savel'yev, Yu. F.; Drozdov, A. I.; Byunau, A. E.

ORG: none

TITLE: A device for automatically controlling the movement of ship models on deeply immersed underwater vanes. Class 21, No. 186547 [announced by Central Scientific Research Institute imeni Academian A. N. Krylov (Tsentral'nyy nauchno-issledovatel'skiy institut)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 48

TOPIC TAGS: shipbuilding engineering, model test, simulation test facility, automatic control system

ABSTRACT: This Author Certificate presents a device for automatically controlling the movement of ship models on deeply immersed underwater vanes, with the use of a tow device and of a measuring arm. The design makes it possible to accomplish the programmed changes of the model, conforming to angles of trim difference, of heeling, and of yaw. It also makes it possible to measure the instantaneous values of all these angles and the magnitudes of the vertical displacement of the model. The lower end of the measuring arm is mounted on a Cardan ball joint. The upper end of the arm is set in a control housing which is the inner frame of a second Cardan joint.

Card 1/2 UDC: 621.501.72:629.12.014.5

AZOVTSEV, A.A., kand. tekhn. nauk

Prospects for the complete automation of marine electric power systems. Sudostroenie 30 no.9:8-11 S '64. (MIRA 17:11)

DZHEMUKHADZE, K.M.; AZOVTSEV, G.R.

Catechols in burnet (Sanquisorba L.). Dokl. AN SSSR 161 no.3:715-717 Mr '65. (MIRA 18:4)

1. TSentral'nyy Sibirskiy botanicheskiy sad. Submitted June 16, 1964.